Domain Decomposition Based Two-level Newton Scheme For Nonlinear Problems

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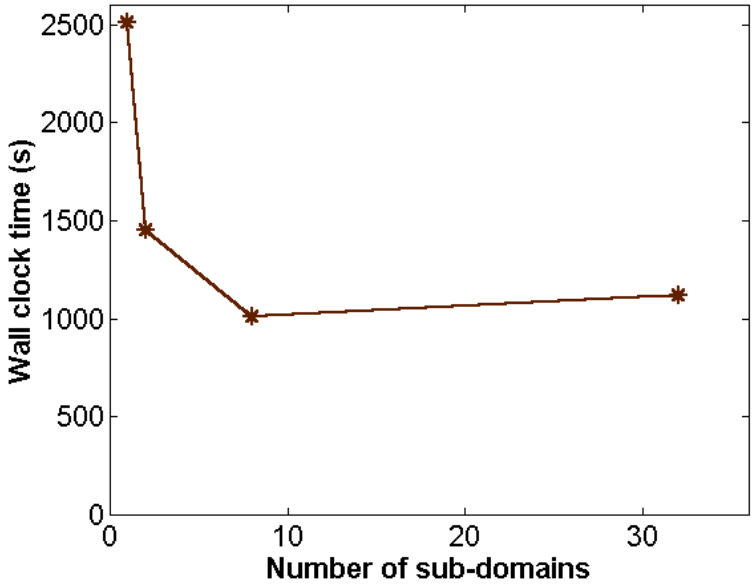
Research:

Our work is focused on developing fast parallel schemes for solving large scale nonlinear finite element systems.

The domain decomposition based algorithm that we have implemented shows savings even on a single processor when compared to a sparse direct solver.



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The scheme also shows good parallel scalability. Sensitivity calculations required for design optimization and reliability analysis are very efficiently evaluated via the same algorithm. The algorithm can also be applied to solve multi-physics problems over nonmatching meshes.